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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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26304	7590	06/28/2006	EXAMINER	
KATTEN MUCHIN ROSENMAN LLP			ZERVIGON, RUDY	
575 MADISON AVENUE			ART UNIT	
NEW YORK, NY 10022-2585			PAPER NUMBER	

1763

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,589

Applicant(s)

PRETI ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 4-15 and 19 is/are allowed.
- 6) ☒ Claim(s) 16-18 and 20-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 11, 2006 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 27-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 27-31 recite the limitation "wherein the baffles". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 16-18, and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conger, Darrell R. (US 4,761,269 A) in view of Tomoyasu, Masayuki et al. (US 5,888,907 A). Conger, Darrell R. et al teaches a reaction chamber (Figure 5; column 7, line 48-68) for an

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epitaxial reactor comprising: a belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14); a susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) inside the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14); and a diffuser (16; Figure 2,5; column 5, line 54 - column 6, line 14; column 7, lines 49-68) disposed on the top of the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14); the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) being made of insulating and transparent material and having an upper flange (16/112 interface; Figure 5), the flange joined to a neck (upper portion of 112; Figure 5; column 5, line 54 - column 6, line 14), the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) comprising a body shaped like a truncated pyramid (compare with Applicant's susceptor 32; Figure 1), the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) being provided with disk-shaped cavities (holding substrates 14; Figure 5; column 5, line 54 - column 6, line 14) for receiving wafers of material to be treated, and supporting an insulating and chemically resistant plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) above it, the plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) facing the flat zone of the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14); the diffuser (16; Figure 2,5; column 5, line 54 - column 6, line 14; column 7, lines 49-68) being formed by a cap (16; Figure 2; column 5, line 54 - column 6, line 14) supplied by a central dome-piece (28; Figure 2; column 5, line 54 - column 6, line 14) connected to a symmetrical annular distribution chamber (80; Figure 2; column 5, line 54 - column 6, line 14); wherein the internal diameter of the cylindrical zone of the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) is sized to keep the belljar ("quartz dome", 112; Figure 5; column 5, line 54 -

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column 6, line 14) at a distance from the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) – claim 16.

Conger further teaches a reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor comprising: a belljar (“quartz dome”, 112; Figure 5; column 5, line 54 - column 6, line 14) made of an insulating transparent material, the belljar (“quartz dome”, 112; Figure 5; column 5, line 54 - column 6, line 14) comprising an upper flange (16/112 interface; Figure 5) joined to a neck (upper portion of 112; Figure 5; column 5, line 54 - column 6, line 14), a shoulder (curved portion of 112; Figure 5) joined to a flat zone and a cylindrical zone joined to the shoulder (curved portion of 112; Figure 5); a susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) disposed inside the belljar, the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) comprising a truncated pyramid-shaped body and having disk-shaped cavities (impressions for 14; Figure 4,5) for receiving wafers of material to be treated; an insulating and chemically resistant flat plate (lower portion of “quartz dome” above 114; Figure 5; column 5, line 54 - column 6, line 14) supported by the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14), the flat plate (lower portion of “quartz dome” above 114; Figure 5; column 5, line 54 - column 6, line 14) facing the flat zone of the belljar (“quartz dome”, 112; Figure 5; column 5, line 54 - column 6, line 14); a diffuser (16; Figure 2,5; column 5, line 54 - column 6, line 14; column 7, lines 49-68) disposed on the top of the belljar (“quartz dome”, 112; Figure 5; column 5, line 54 - column 6, line 14), the diffuser (16; Figure 2,5; column 5, line 54 - column 6, line 14; column 7, lines 49-68) being formed by a cap (16; Figure 2; column 5, line 54 - column 6, line 14) supplied by a central dome-piece (28; Figure 2; column 5, line 54 - column 6, line 14)

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connected to a symmetrical annular distribution chamber (80; Figure 2; column 5, line 54 - column 6, line 14) – claim 32

Conger does not teach that Conger's neck (curved upper portion of 112; Figure 5) is joined to a flat zone, the flat zone joined to Conger's shoulder (curved portion of 112; Figure 5), and Conger's shoulder (curved portion of 112; Figure 5) joined to Conger's cylindrical zone (smallest diameter portion of 112; Figure 5). Conger does not teach that Conger's plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) is "flat". Conger does not teach having a plurality of pipes of the same length which connect Conger's annular chamber (80; Figure 2; column 5, line 54 - column 6, line 14) of Conger's cap (16; Figure 2; column 5, line 54 - column 6, line 14) to a dome zone of Conger's belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) situated just underneath its neck (upper portion of 112; Figure 5; column 5, line 54 - column 6, line 14), the plurality of pipes feeding gases into Conger's belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) and ensuring a uniform distribution of gas flow at a lower speed.

Conger further does not teach:

- i. wherein the flat plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) is arranged to deflect gases coming from a vertical direction from the plurality of pipes and to guide the gases into a horizontal direction between the flat plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) and the flat zone until the end of the flat plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) where the

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- gases flow vertically downward to the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14) for improved deposition – claim 16
- ii. The improved reaction chamber for an epitaxial reactor (Figure 5; column 7, line 48-68) of claim 18 wherein the cap (16; Figure 2; column 5, line 54 - column 6, line 14) is closed at the top by a flange (16/112 interface; Figure 5) terminating in a dome-piece (28; Figure 2; column 5, line 54 - column 6, line 14) communicating with a sleeve for connection to an external source of gas to be used in the same reaction chamber (Figure 5; column 7, line 48-68), which dome-piece (28; Figure 2; column 5, line 54 - column 6, line 14) is provided with a bottom defining at least one circular slit (88; Figure 2; column 5, line 54 - column 6, line 14) for ensuring a rigorously uniform distribution of gas to an annular chamber (80; Figure 2; column 5, line 54 - column 6, line 14) for supplying the plurality of pipes emerging from the distributor inside the belljar, as claimed by claim 20
- iii. The improved reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor (Figure 5; column 7, line 48-68) of Claim 20 wherein in addition to the slit (88; Figure 2; column 5, line 54 - column 6, line 14) in the bottom, a further annular slit (80; Figure 2; column 5, line 54 - column 6, line 14) helps ensure the uniform distribution of gas to the annular chamber (80; Figure 2; column 5, line 54 - column 6, line 14) supplying the outlet pipes, as claimed by claim 21
- iv. The improved reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor (Figure 5; column 7, line 48-68) of Claim 20 where the cap (16; Figure 2; column 5, line 54 - column 6, line 14) of the distributor comprises an internal chamber for the flow of a cooling fluid, as claimed by claim 22

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- v. The improved reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor (Figure 5; column 7, line 48-68) of Claim 20 characterized in that the outlet pipes are made of a material which is chemically inert with respect to the gas used in the belljar, as claimed by claim 23 – Applicant's claim limitation of "chemically inert with respect to the gas used in the belljar" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- vi. The improved reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor (Figure 5; column 7, line 48-68) of Claim 23 wherein the outlet pipes are made of glass, as claimed by claim 24.
- vii. The improved reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor (Figure 5; column 7, line 48-68) of Claim 23 wherein the outlet pipes are made of ceramic material, as claimed by claim 25
- viii. The improved reaction chamber (Figure 5; column 7, line 48-68) for an epitaxial reactor (Figure 5; column 7, line 48-68) of Claim 23 wherein the outlet pipes are made of quartz, as claimed by claim 26

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- ix. Conger's symmetrical annular distribution chamber (80; Figure 2; column 5, line 54 - column 6, line 14) having a plurality of pipes of the same length which connect the annular chamber of the cap (16; Figure 2; column 5, line 54 - column 6, line 14) to a dome zone of the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) situated just underneath its neck (upper portion of 112; Figure 5; column 5, line 54 - column 6, line 14), the plurality of pipes feeding gases into the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) and ensuring a uniform distribution of gas flow at a lower speed; wherein the internal diameter of the cylindrical zone of the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) is sized to keep the belljar ("quartz dome", 112; Figure 5; column 5, line 54 - column 6, line 14) from the susceptor (114; Figure 5; column 5, line 54 - column 6, line 14); and wherein the flat plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) is so arranged as to deflect gases coming from the plurality of pipes to absorb vertical energy imparted into the gas flow and wherein the gases on the flat plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) flow in a horizontal direction until an edge of the flat plate (lower portion of "quartz dome" above 114; Figure 5; column 5, line 54 - column 6, line 14) – claim 32

Tomoyasu teaches Tomoyasu's neck (32; Figure 1) is joined to a flat zone (horizontal 32/4 interface) and a cylindrical zone (vertical 32/4 interface) joined to Tomoyasu's neck (32; Figure 1). Tomoyasu teaches that Tomoyasu's plate (40) is "flat". Tomoyasu teaches having a plurality of pipes (46, 64; Figure 1) of the same length which connect Tomoyasu's annular chamber (62,

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44a-d; Figure 1) of Tomoyasu's cap (42) to a dome zone of Tomoyasu's reactor situated just underneath its neck (flange portion of 42), the plurality of pipes feeding gases into Tomoyasu's reactor (4) and ensuring a uniform distribution of gas flow at a lower speed. A reaction chamber (4; Figure 1) for Tomoyasu's reactor, according to Claim 4, characterized in that Tomoyasu's cap (42) of Tomoyasu's distributor (30) comprises an internal chamber (82) for a flow of a cooling fluid.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Conger to add a plurality of pipes of the same length as taught by Tomoyasu and dimension Conger's chemically resistant plate to be partially flat, and add an internal chamber to Congers's distributor for a flow of a cooling fluid as taught by Tomoyasu.

Motivation for Conger to add a plurality of pipes of the same length as taught by Tomoyasu is for uniform process gas application as taught by Tomoyasu (column 8, lines 22-32), and add an internal chamber to Congers's distributor for a flow of a cooling fluid as taught by Tomoyasu is for maintaining the process gases at a predetermined temperature as taught by Tomoyasu (column 6, lines 55-67), and motivation to dimension Conger's chemically resistant plate to be partially flat is for optimizing Conger's gas flow as taught by Conger (abstract). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

Allowable Subject Matter

7. Claims 1, 4-15, and 19 are allowed.

Response to Arguments

8. Applicant's arguments with respect to claims 16-18 and 20-32 have been considered but are moot in view of the new grounds of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Rudy Zervigon
6/28/6